

2001 the Ministry of Social Health initiated a project that combined a literature review on music therapy and music activities with persons with dementia, together with instructions of the different implementations resulting in the book “Musik & Demens” (Ridder 2002a).

## The dementia syndrome

Dementia is a syndrome representing nearly 100 different diseases. One of these diseases is Alzheimer’s disease (AD) that represents a majority of diagnosed dementia cases. Other dementia diseases are e.g. Lewy body dementia, multi-infarct (vascular) dementia, AIDS dementia, alcoholic dementia, herpes encephalitis, dementia pugilistica (boxer’s syndrome), heavy metal poisoning, and diseases named after Pick, Creutzfeldt-Jakob, Huntington, Parkinson, Wilson, and Binswanger.

Dementia is normally categorized as cortical, subcortical, or mixed dementias, but may also be a result from other conditions, e.g. vascular, infectious, or toxic. In cortical dementias primarily the grey matter is affected as in Alzheimer’s disease, where massive cell loss and brain shrinkage is seen. But even if AD is termed a cortical dementia, changes in subcortical areas (e.g., hippocampus and amygdala) are seen. The neural changes, where some may not be registered until post-mortem inspection, show atrophy, deterioration of the large neurons, missing neurotransmitter activity, cell death, accumulation of neurofibrillary tangles or betaamyloid, and clumps of neuritic plaques between the cells.

“Noticeably spared are the primary motor and sensory areas (tactile, auditory, visual) and the basal ganglia. The affected structures correspond to areas of higher cognitive functioning and memory, leaving relatively untouched more basic sensory and motor abilities.” (Zillmer & Spiers 2001, p. 367)

Subcortical dementias, such as Parkinson’s disease, Huntington’s disease, or Creutzfeldt-Jakob disease, affect noncortical structures, e.g. basal ganglia or cerebellum. This affects the motor system and leads to response latencies and executive dysfunction. Where the primary degenerative dementia diseases are progressive, secondary neurotoxic conditions (e.g. caused by alcohol) may be static when the influence on the brain has stopped. It is clear that the term dementia covers very different symptomologies, but in WHO’s diagnostic criteria ICD-10 or in DSM-IV some general main features are described, e.g. *loss of cognitive or intellectual function*. In this study I refer to persons with progressive cortical dementia in advanced stages. Figure 1.2 illustrates how the different cognitive domains are affected by the progression in AD.

The figure shows that episodic memory is the first to disappear in the beginning of dementia, whereas basic sensory and motor function remains unaffected until late in the disease. In severe dementia aspects of procedural memory, simple judgements, orientation in familiar environment, syntactic language functioning, recognizing of faces or objects, basic sensory and motor functioning are the last spared.

In order to describe the different general stages of deterioration I here use the GDS; The Global Deterioration Scale for Assessment of Primary Degenerative Dementia defined by Professor at New York University Berry Reisberg (Reisberg *et al.* 1982), and the FAST; Functional Assessment Staging (Reisberg 1988). The Global Deterioration Scale describes 7 stages, beginning with stage one where the person shows no cognitive decline. At stage 4 the person suffers mild cognitive impairment, and on stage 5 the person suffers moderate dementia and is no longer able to survive without some assistance. In his theory of retrogenesis Reisberg (1999) compares the functional abilities on this stage with the functional abilities of a child aged 5-7 years. Stage 6, moderately severe dementia, is compared with the functional abilities

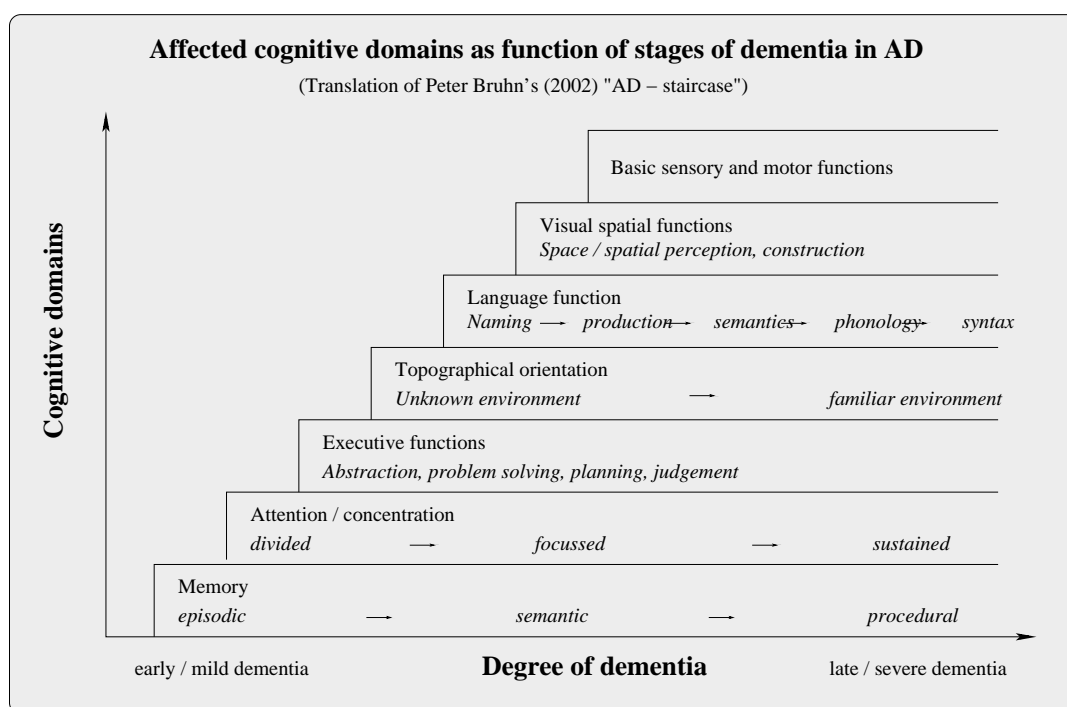


Figure 1.2: AD-staircase

that a child aged 2-5 year shows. On stage 7, severe dementia, the person is totally dependent on help from other people. This study particularly refers to persons with *moderately severe dementia*, stage 6, and *severe dementia*, stage 7, showing severe cognitive decline (The GDS scale can be found at [www.geriatric-resources.com](http://www.geriatric-resources.com)). The six participants in the study are at the borderline between stage 6 and stage 7. Three participants at the very 'low' end of stage 6, and three participants on the first steps of stage 7. They are referred to suffer from severe dementia or dementia in advanced stages.

As a very general rule of thumb there are 5 main symptoms of dementia, the five A's: amnesia, aphasia, agnosia, apraxia, and agitation.

**Amnesia** means loss of memory, e.g. loss of old memories (retrograde amnesia) or loss of the ability to encode and learn new information (anterograde amnesia).

**Aphasia** is a partial or complete loss of language abilities.

**Agnosia** is inability to recognize the form and/or function of objects and people.

**Apraxia** is impaired cortical motor processing and inability to perform voluntary actions despite adequate amount of motor strength and control. (Zillmer & Spiers 2001)

**Agitation** starts with the letter A, and is therefore mentioned among the 5 A's. Agitation is not the only behavioural and psychological symptom associated with dementia, but it is a symptom that reduces quality of life for the sufferer and makes dementia care very demanding and challenging. Here a distinction between *primary symptoms* that are related to neurological changes, and *secondary symptoms* originating in causes not

*directly* related to the dementia disease, and which might be treatable by pharmacological as well as non-pharmacological means. Agitation is just one symptom of dementia embraced by the term BPSD (behavioural and psychological symptoms of dementia, see *www.ipa-online.org*) that replaces the term “behavioural disturbances”. BPSD also includes symptoms of e.g., psychosis, delusions, paranoia, hallucinations, aggression, hyperactivity, and depression. The term is increasingly used, at least in the Nordic countries, but is not (yet) classified as a subtype in the dementia diagnoses in DSM-IV or ICD-10 showing that especially psychological symptoms are underestimated as a health problem in official registration.

## Two extreme states

In persons with dementia two extreme states might appear; either a state, where the person is sitting apathetic in a chair not taking part in any activities or in the social life, or a state where the person is reacting with exuberance, frenzied activity or aggression. - A state of a) total withdrawal or a state of b) catastrophic reactions.

a) States of withdrawal resemble Tom Kitwood’s (1997) description of ‘burnt-out’ states. Professor Tom Kitwood (1937-1998), who established the Bradford Dementia Group, has done influential research on the subjective experience of dementia, and I will refer to his ideas. Burnt-out states

“typically ensue after the nervous system has been at a high level of arousal for a long period; there comes a stage when it can no longer sustain such intensity of discharge. The burnt-out condition is not one of positive peace, but of very severe depletion.” (Kitwood 1997, p. 80)

b) The state of catastrophic reactions is similar to Kitwood’s description of three global states of terror, misery, and rage;

“...these are raw emotions associated with a high level of arousal of the sympathetic nervous system. Here a meaning is diffuse – not attached to specific situations, persons or objects.” (Kitwood 1997, p. 80)

Cohen-Mansfield (research director at Research Institute on Aging, Rockville, USA) describes four categories of agitated behaviour;

1. physically aggressive agitated behaviour,
2. physically non-aggressive agitated behaviour,
3. verbally aggressive agitated behaviour, and
4. verbally non-aggressive agitated behaviour.

Physically and verbally aggressive behaviour might reflect the states of catastrophic reactions and emotional arousal: “Agitation may be an over-expression of emotional arousal” (Aldridge 2001). Catastrophic reactions might lead to stress, which affects the progression of dementia in a malicious way, as “prolonged exposure to stress can cause irreversible loss of hippocampal neurons, and may be relevant to the cognitive deficits seen in many aged individuals” (McEwen & Sapolsky 1995, p. 205).

Additional to implying serious stress to the person, states of catastrophic reactions are very challenging to caregivers, and carry economical costs to the whole society. Consequences

seem to be physical restraints and medication. In dementia care focus is on agitation, as this is most challenging to our systems, both physically and economically. States of burnt-out or vegetation reduces quality of life dramatically, but mainly “only” to the person him/herself, and there seems to be not so much focus on this problem as with problems of agitation.

In between the two extreme states people might undergo a degree of ‘re-menting’ and reacquire capacities for meaning-giving (Kitwood 1997, p. 80). In these periods the dementing process is reset and good care might even create conditions that allow some degree of neuroregeneration (ibid., p. 101). Instead of merciless progression of the disease with stagnant periods, the ‘re-menting’ idea illustrates varying periods of ups and downs, and most importantly an interaction or causal connection to the environment.

Kitwood (1997) and Naomi Feil (1992) describe the two extreme states seen in dementia in their respective work. The states are seen as more permanent conditions for longer periods of time. Contrary to this I see them as fluctuations that happen throughout the day. In the next chapters I describe similar states of hyper- and hypo-arousal, where the person with dementia in periods of the day, e.g. in the late afternoon, shows more or less extreme states of agitation which then later is replaced by burnt-out states. The cause of these fluctuations in mood and behaviour might be neurological or physiological, but might also be influenced by environment, by social interaction and by fulfilment – or *no* fulfilment – of needs.

## Dialogic degenerative disease

The various clinical symptoms of dementia occur very differently according to type of dementia. Alzheimer’s disease is often associated with anomic aphasia, characterized by word-finding and -naming difficulties. The way the person talks can be illustrated as “word salad”; there seems to be no meaning in what is said, but the way things are said sounds quite “normal”. In these cases semantic meaning has disappeared but phonological and syntactical aspects of language seem to be preserved. Other types of dementia, e.g. vascular dementia may show very small signs of aphasia, or the opposite; showing signs of global aphasia, according to which parts of the brain that are most inflicted. Some persons may show signs of nonfluent aphasia, where they clearly know what they want to say, but can’t find the word even though it is “just on the tip of the tongue”.

In general, loss of conversational skill is likely to be an early marker of dementia syndrome (Orange *et al.* 1998, p. 135), at later stages of the different dementia diseases it seems very troublesome or even impossible to maintain conversation or dialogue. Language deterioration is a serious problem and might cause secondary consequences of dementia.

“Studies that consider communication-related stress show that communication breakdown is perceived by caregivers to be a primary problem in coping with the disease, and that communication problems increase the risk of early institutionalisation of the individual with DAT.” (Orange & Colton-Hudson 1998, p. 57)

Considering the severe implications of communication breakdown David Aldridge calls dementia a dialogic degenerative disease:

“...rather than neuro-degenerative diseases, we are faced with dialogic-degenerative diseases.” (Aldridge 2001a)

In dialogic degenerative diseases following symptoms of dementia mainly disturb the communication:

- Semantic anomia
- Expressive speech deficits
- Speech comprehension deficits
- Attention and orientation disturbances
- Response latencies

Orange & Colton-Hudson suggest that caregivers must show attention to the communication breakdown that might lead to isolation, depression and agitation:

“... caregivers will need to learn that they may be able to overcome these progressive declines in communicative performance if they adjust their language, speech, and nonverbal components of their communication, the environments in which communication takes place, and their attitudes, perceptions, and expectations of performance.” (Orange & Colton-Hudson 1998, p. 136)

Lacking abilities to communicate might cause secondary symptoms that are not primarily caused by the neurological deficits. Robert & Algase (1988) set up 3 types of behaviour that indicate a disordered person-environment interaction:

- Repetitive behaviour (wandering, trailing, rubbing, etc.) may indicate that the person is unable to access adequate physical and/or social environmental information.
- Catastrophic reactions (emotional outbursts, aggressive acts) may indicate that environmental demands exceed the capacity of the person to respond adaptively.
- And situationally inappropriate behaviour (hiding and wrapping things, fiddling, making noises, eating non-food) suggests that the person is misinterpreting environmental or personal information. (Robert & Algase 1988, p. 89)

To catastrophic reactions I want to add reactions where the person is in a more or less constant state of stress caused by too high environmental demands, but also by total isolation, as it is not possible to fulfil psychosocial needs. In the next chapter it is described that it is only possible to fulfil psychosocial needs in a dialogue. From research in infant development it is broadly accepted that children deprived of social communication react seriously on the lack of bonding. It is not enough to fulfil physical needs and give the child food, clothes, and a place to live; psychosocial needs must be fulfilled too. For grown-ups isolation and no personal network are seen to increase risk of getting psychiatric problems. Only through social contact and communication is it possible to understand and validate psychosocial needs.

## Psychosocial needs

The definition of psychosocial needs are related to humanistic theories. Abraham Maslow (1908-1970) described a hierarchy of needs; physiological needs, safety, affiliation, esteem and self-actualisation. Erik Erikson (1902-1994) focussed on social relationship and described psychosocial development, stressing the interaction between the person and the psychical and social environment. Tom Kitwood (1997, 1997b) focussed his research into the subjective world of dementia and defined a cluster of five great psychosocial needs – comfort, attachment, inclusion, occupation, and identity – which come together in the central need for love (Kitwood 1997). He sees that the first psychological task in dementia care is to generate interactions of

a really positive kind, and the second to enable the interactions to continue (Kitwood 1997, p. 96). For caregivers this means that the more severe the dementia, the greater the need for special interactive competencies will be (Kitwood 1997, p. 97).

Kitwood uses the term *need* to illustrate “that without which a human being cannot function, even minimally, as a person” (Kitwood 1997b, p. 19). He sees the needs as grounded in our evolutionary past and related closely to the way the nervous system functions, but dependent on a particular cultural framework. When needs are met it is possible to break the situation where a person is trapped in states of burnt-out or catastrophic reactions:

“As the whole cluster of needs is met, it is likely that there will be an enhancement of the global sense of self-worth. At some point in the meeting of needs a person may be enabled to move out of fear, grief and anger, into the domain of positive experience that we have thus far left uncharted.” (ibid., p. 20)

By realizing and recognizing the causes to secondary symptoms of dementia it is possible for caregivers first of all to understand the symptomatology, secondly to implement strategies for social interaction in order to meet psychosocial needs.

“All so-called problem behaviours should be viewed, primarily, as attempts at communication, related to need. It is necessary to seek to understand the message, and so to engage with the need that is not being met.” (Kitwood 1997, p. 136)

Kitwood defines 12 types of positive interaction that might function as strategies to meet psychosocial needs; recognition, negotiation, collaboration, play, stimulation, celebration, relaxation, validation, holding, facilitation, creation, and giving (ibid., p. 90; Innes & Hatfield 2002). He describes validation, holding, and facilitation as distinctly psychotherapeutic techniques. I will not describe each of these positive interactions, but will accentuate validation and holding as terms very relevant to music therapy. *Validation* literally means to make strong or robust;

“to validate the experience of another is to accept the reality and power of that experience, and hence its ‘subjective truth’. The heart of the matter is acknowledging the reality of a person’s emotions and feelings, and giving a response on the feeling level. Validation involves a high degree of empathy, attempting to understand a person’s entire frame of reference, even if it is chaotic or paranoid, or filled with hallucinations.” (ibid., p. 91)

Naomi Feil (1992) has centred her work on validation and describes her approach as ‘validation therapy’. The music therapist, Erndomnez-Grocke (1993), illustrates how she uses well known songs as a way of validating experiences of a client with AD, and contrasts this to the Reality Orientation approach described, e.g. by Riegler (1980).

*Holding* is a term used in client-centred therapy by Rogers (1951) and by Donald Winnicott (Davis & Wallbridge 1988). Kitwood defines holding as follows: “To hold, in a psychological sense, means to provide a safe psychological space, a ‘container’; here hidden trauma and conflict can be brought out; areas of extreme vulnerability exposed” (Kitwood 1997, p 91).

In this work I will not directly relate to the single needs Kitwood defines, or define the needs in depth, but relate to his ideas of social contact and communication.

## Summary of the dementia part

It is important to stress that dementia shows other symptoms than neurological deficits, and that behavioural and psychological symptoms of dementia (BPSD) are considered and

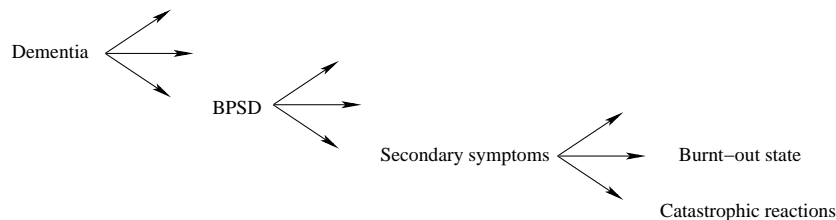


Figure 1.3: Dementia might lead to catastrophic reactions or to burnt-out states

taken seriously. BPSD might be expressed as secondary symptoms in burnt-out states or catastrophic reactions (see figure 1.3). Persons suffering from dementia suffer a dialogic degenerative disease, which makes it problematic and very challenging to fulfil psychosocial needs. If psychosocial needs are fulfilled, extreme states of burnt-out or catastrophic reactions might be avoided. By adjusting the communication with the person focussing on nonverbal components, on adaptation of environment and stimuli, and on attitude, expectations, and demands, it might be possible via the communication to fulfil psychosocial needs (see figure 1.4).

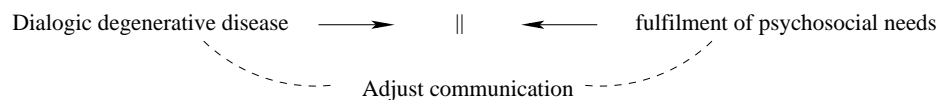


Figure 1.4: Summary of terms presented in chapter 1

## 1.3 Function and application of music

I have now introduced an understanding of dementia that is referred to later in this material. Next, I want to relate this to music therapy. A great number of research studies dealing with music therapy or effects of music earmark a section in the beginning to define the phenomenon; music. Often a list of historical arguments and cultural, social, religious or other implementations of music and healing are presented. Instead of such a section I refer to professor Even Ruud's article: "Music therapy – history and cultural contexts" (Ruud 2000), where he reviews two major new texts on music therapy: Horden, 2000: *Music as medicine. The History of Music Therapy since Antiquity* and Gouk, 2000: *Musical Healing in Cultural contexts*. I also want to refer to Foster's (1998) dissertation on the effect of music on recall with persons with dementia, where he starts the introductory chapter with: "Music is a world-wide phenomenon." Hence, instead of the section defining the phenomenon music I will introduce the application of music in a very pragmatic way by examining the function and application of music. The focus will be on persons with dementia and their participation in music activities or music therapy, described in newer published studies from 1980-2001. As such my focus is on the kind of music activities Johann F. might have met if he would have been born about a 100 years later.



## The use of music with persons with dementia

A systematic literature review (Ridder 2002a) demonstrates that there is a growing interest in using music in dementia care. (*For an updated review, see Ridder 2005a, 2005c*). There is a large basis of knowledge on the influence of music on persons with dementia and a great number of studies testing e.g. the stimulating effects of music. In all these studies more than 800 people with dementia have participated in music tests, music activities, or in music therapy. The way music has been applied as well as the function of the music has differed very much, which I try to describe in headlines in the following. Inclusion criteria for the literature search and search methods are described in "Musik og Demens" (Ridder 2002a). In a meta-analysis concerning music therapy for dementia symptoms in the Cochrane Database carried out in 2000, Koger & Brotons find "no randomised controlled trials, or trials with quantitative data suitable for analysis" (Koger & Brotons 2000). To me this reflects that music therapy research in dementia care still is in its initial phase where studies describing the precise nature of the research topic are needed.

Just as the research in Alzheimer's disease started with a precise description of single finds there is a need for precise descriptions of the details; of techniques, methods, settings and client groups, before these are put together in large-scale outcome studies.

By means of systematic literature search, of Brotons' overview of the music therapy literature relating to elderly people (Brotons 2000), and of using the music therapy article collection at Witten-Herdecke university, as well as the music therapy library at Aalborg University, I got hold of the following material (see the list below) dealing with music and dementia. In the material various research strategies are used such as: 1) (randomised) controlled trials, 2) single case designs (AB, ABA, ABAB, multiple base-line designs), 3) pre/post test designs, 4) surveys, 5) comparative methods (here focussing on assessment tools), 6) documented case descriptions, and 7) anecdotal case descriptions. The latter are included when they embrace elaborate and relevant descriptions of the clinical setting and of the participant(s). It is important to notice that entirely theoretical literature, handbooks, and background material (e.g. Aldridge 2000; Bright 1986, Bunne 1986, Friis 1987) not are included in the list.

- |                           |                            |                               |
|---------------------------|----------------------------|-------------------------------|
| Aldridge, G. 2000         | Clair 1996                 | Groene <i>et al.</i> 1998     |
| Ansdell 1995              | Clair & Bernstein 1990a    | Götell <i>et al.</i> 2000     |
| Ashida 2000               | Clair & Bernstein 1990b    | Hanser & Clair 1996           |
| Baumgartner 1997          | Clair & Bernstein 1993     | Hanson <i>et al.</i> 1996     |
| Beatty <i>et al.</i> 1988 | Clair & Bernstein 1994     | Hintz 2000                    |
| Beatty <i>et al.</i> 1994 | Clair & Ebberts 1997       | Johnson & Ulatowska 1996      |
| Bolger & Judson 1984      | Clair <i>et al.</i> 1995   | Johnson <i>et al.</i> 1998    |
| Braben 1992               | Clark <i>et al.</i> 1998   | Korb 1997                     |
| Bright 1997               | Crystal <i>et al.</i> 1989 | Lauvland <i>et al.</i> 1992   |
| Brotons & Pickett-C. 1994 | Denney 1997                | Lindenmuth <i>et al.</i> 1992 |
| Brotons & Pickett-C. 1996 | Eeg 2001                   | Lipe 1991                     |
| Brotons & Koger 2000      | Fitzgerald-Cloutier 1993   | Lipe 1995                     |
| Brown <i>et al.</i> 2001  | Foster 1998                | Lord & Garner 1993            |
| Brust 1980                | Gaertner 1999              | Mathews <i>et al.</i> 2000    |
| Carruth 1997              | Gardiner 2000              | Munk-Madsen 2001a             |
| Casby & Holm 1994         | Gerdner & Swanson 1993     | Newman & Ward 1993            |
| Christie 1992             | Glynn 1992                 | Norberg <i>et al.</i> 1986    |
| Christie 1995             | Goddaer & Abraham 1994     | Odell-Miller 1996             |
| Clair 1991                | Groene 1993                | Olderog-M. & Smith 1989       |



Palo-Bengtsson <i>et al.</i> 1998	Riegler 1980	Thomas <i>et al.</i> 1997
Polk & Kertesz 1993	Sambandham & Schirm 1995	Tomaino 2000
Pollack & Namazi 1992	Silber 1999b	Wellendorf 1991
Prickett & Moore 1991	Simpson 2000	York 1994
Ragneskog & Kihlgren 1997	Smith-Marchese 1994	
Ragneskog <i>et al.</i> 1996	Swartz <i>et al.</i> 1992	
Ridder 2001	Tabloski <i>et al.</i> 1995	

These studies that all include persons with dementia are dealing with very different implementations of music, e.g. background music, active improvisation with instruments, singing, or folk dancing. Various kinds of settings are described, e.g. group or individual settings. Considering the overall function of music and purpose of the setting I here set up the following main groups of musical approaches:

Function of music	Purpose
Evaluative	Assessment
Regulative	Sedative/relaxing adaptation Behavioural adaptation
Stimulative	Bodily stimulation Cognitive stimulation Social interaction
Communicative	Personal interaction

In our everyday understanding, music as art may mostly be considered for its aesthetic function. In literature covering the areas music therapy and dementia I see the four main categories listed in the table dealing with other functions of music.

When music is used with the function to *evaluate*, singing, playing together, or reactions to the music therapy are observed and used for assessment procedures in order to obtain evidence or information (see Wigram, Pedersen & Bonde 2002, p. 246).

With a *regulative* function musical elements are used to change e.g. behaviour or mood. Not to be confused with “Regulative Musiktherapie” developed by Schwabe, Germany (see Decker-Voigt *et al.*, p. 317). Music played at dinnertime might regulate agitation or time spent on eating. Techniques used for receptive or active music therapy such as the iso-principle defined by Ira Altschuler (1948), as well as entrainment (Rider 1997), might make it possible for the therapist to “provoke” a change in the participant.

Music might also be used for the purpose to *stimulate* the participants to be active in various ways. Music is used to motivate and engage e.g. by focussing on language functioning, cognitive abilities or physical movements, with the view on a function either to “use it, or lose it”.

At last, music is described to function as a way to *communicate* with a person. Focus is on interaction at a social-pragmatic level (see page 51) where the “whole” person is considered, – a person with emotions, cultural identity, psychosocial needs, and story of life.

The various approaches to music in the studies reflect different music therapeutical traditions and especially reflect the different needs of the client group. In only 15 studies there is a description of the participants’ stage of dementia. Knowing the precise stage of dementia or precise descriptions of needs makes it possible to search information of music implementations targeted at a specific group. This is difficult with the little number of studies that indicate this specific information about the participants.

The way an activity is carried out is strongly dependent on social, cognitive and functional abilities of the participants. When the demands in the activity are adjusted to participant’s

capacities the consequence seems to be a wide range of initiatives. The music can be used actively or receptively, in groups or individually, with or without instruments, with accompaniment or a cappella, with live or taped music, in structured activities or in activities of daily living (ADL), including other participants (staff, relatives, children) in open groups, where participants are free to come and go, or in closed groups where the constellation of group members is carefully composed.

I want to describe in which way the music is implemented and to correlate this with the main findings from each research study. In order to do this I have set up 14 different ways music therapy is implemented with a client group of persons suffering from dementia. These are characteristics of activities or therapy described in the present literature with this client group and roughly divided in categories. I am not describing each implementation here (they are described in Ridder 2002a) but I give an overall characteristic in table 1.1. I call the different implementations “techniques of music therapy”, being aware of the broad span between implementations that are therapeutical in a curative sense, and activities with the function to entertain and/or divert.

Techniques of music therapy	Live music (Mt plays)	Taped music	Instrument playing (pp)	A cappella singing	Structured programme	Structured framework	Open area	Closed group	Open group	Individual
Background music		X					X		X	
Music listening		X								X
Music & movement	X	x			X	X		X		
Music-remembrance	x	X			x	X		X		
Music-stimulation	X	x	X		X	X		X		
MTC/music therapeutical care				X		X				X
Play-along		X	X				X		X	
Sing-along	X				X	X	X		X	
Social dancing, folk dancing	X	x			x	X	x	X	x	
Stress reduction	x	X	x	x	X	X		X		
Therapeutical improvisation	X	x	X	x		X		X		X
Therapeutical singing				X		X				X
Vibroacoustic therapy		X				X				X
Vibrotactile stimulation	X		X		X			X		

Table 1.1: Overview of different techniques of music therapy described in the literature

14 techniques are listed in table 1.1, e.g. *background music* and *music listening*. The X indicate that the approach is used in the initiative, while the small x indicate that it *might* be used. Considering which music therapy techniques are used in the setting (the categories set up in table 1.1) I now want to correlate the findings or results from the 75 studies lined up at page 28 with the overall function of the music described at page 29.

### Evaluative approach: Music as an assessment tool

“Music therapy appears to offer a sensitive assessment tool. It tests those prosodic elements of speech production, which are not lexically dependent. Furthermore, it can be used to assess those areas of functioning, both receptive and productive, not covered adequately by other test instruments, that is fluency, perseverance in context, attention, concentration and intentionality.” (Aldridge 1998, p. 27)

The following studies are suggesting assessment tools using active music activities and/or improvised music; Hintz (2000), Lipe (1995), York (1994), or with taped music (Glynn 1992). The clinical assessment tools are seen as supplements to the MMSE or other tests. The use of musical assessment tools is still in its initial phase with persons with dementia. The studies are of a newer date, and there seems to be a growing interest in the evaluative function of music. Additionally it should be mentioned that more material, e.g. Aldridge, G. (2000) and Munk-Madsen (2001b) describe the evaluative function of music.

### Regulative approach. Music with sedative function

Hanser & Clair (1996) implement direct *stress reduction* techniques with early stage of possible AD, together with their caregiver or a family member. Body movement, self-massage of facial muscles, muscle relaxation, guided imagery experience, tips for sleep induction, etc., are included in the settings, showing that “music therapy is a viable approach” for persons with AD and for their caregivers.

*Music listening*, using cassettes intended specifically for relaxation and played whenever nurses found the patients restless, made persons with AD in an experimental group (n=9) sleep significantly longer than persons with AD in a control group (n=9) (Lindenmuth *et al.* 1992).

Up to now only two studies have examined the sedating regulative function of music and how music can function to enhance relaxation with persons suffering from dementia.

### Regulative approach. Music leading to behavioural adaptation

Reduction of agitated behaviour, such as ambulation or aggressive and disturbing behaviour is seen in a great number of studies. *Music-stimulation* reduces agitation (Ashida 2000; Brotons & Pickett-Cooper 1996; Groene 1993), also when implemented individually (Gardiner 2000). *Music therapeutic singing* reduces ambulation (Fitzgerald-Cloutier 1993; Olderog-Millard & Smith 1989), and singing used in music therapeutic care (*MTC*) reduces agitation during bathing episodes (Brown *et al.* 2001).

The use of tapes with familiar music reduces agitation during bathing episodes too, and even reduces aggressive behaviour (Clark *et al.* 1998; Thomas *et al.* 1997). During dinnertime that might be noisy and turbulent if food is served in canteen-like surroundings, the use of *background music* reduces aggressive behaviour (Denney 1997; Goddaer & Abraham 1994) and even increases the time spent on eating (Ragneskog *et al.* 1996).

At last, individual *music listening*, where the person with dementia might sit in his/her own room listening to familiar tapes, reduces symptoms of agitation (Casby & Holm 1994; Gerdner & Swanson 1993; Korb 1997; Tabloski *et al.* 1995; Sambandham & Shirm 1995). In a study from 1994 Clair & Bernstein are not able to establish an effect on agitation of stimulating or sedating background music played during dinnertime and in the day room of the unit (Clair & Bernstein 1994).

Nearly a fourth of the studies deal with the regulative effect of music on behavioural adaptation. Two of these studies are from Sweden, the rest from US, where there is a strong tradition for behavioural research.

### Stimulative approach. Music as bodily stimulation

*Music & movement*, a group activity where moving, dancing or exercises to taped or live music are part of the programme, show increased response, increased quality of life, reality orientation (RO), active participation and sociability (Götell *et al.* 2000; Groene *et al.* 1998; Hansson *et al.* 1996; Newman & Ward 1993; Smith-Marchese 1994). In Newman & Ward's (1993) study preschool children were invited to participate in music & movements, and the conclusion was that the presence of young children taking part in the activity might produce positive behaviour that demonstrate responsiveness and involvement in activities.

*Social dancing* (Palo-Bengtsson *et al.* 1998) is concluded to preserve and support patients' intellectual, emotional and motor functions, and group activities where dancing is part of the programme are concluded to elicit adequate positive behaviour, engagement, reminiscence, and improving social interactions between patients and caregivers, between patients and peers, and to increase relatives' satisfaction with visits (Baumgartner 1997; Clair & Ebberts 1997; Götell *et al.* 2000; Newman & Ward 1993; Pollack & Namazi 1992).

Clair & Bernstein's (1990b) study of *vibrotactile* stimulation shows increased participation, and their study of *vibroacoustic* therapy (1993) shows that the participants do not choose between different sorts of stimulation. Bolger (1984) gives a medical report about a patient with chronic obstructive pulmonary disease who is unable to follow verbal commands to cough or to take a deep breath. But the patient would repeat words, and repeat singing too. When singing the patient was noted to be taking deep breaths and to cough. "Her clinical status, arterial blood gas levels, and emotional status all improved greatly during this therapy" (Bolger 1984).

Close to 20% of the studies listed at page 28 focus on the stimulative effect of music by implementing activities with dance and movement. No studies directly examine the physiological effect of music with this target group.

### Stimulative approach. Music as cognitive and attentional stimulation

*Music-stimulation* groups positively influence speech ability and fluency of speech (Brotons & Koger 2000), improve active participation and engagement (Brotons & Pickett-Cooper 1994; Christie 1992; Hansson *et al.* 1996; Lauvland *et al.* 1992; Odell-Miller 1996), affective responses (Korb 1997), and reality orientation (Riegler 1980). The degree of active participation increases when a music therapist has instructed staff how to carry out the activity (Mathews *et al.* 2000), or when the music therapist structures the session and gives adequate instructions to participants about the use of the instruments (Clair *et al.* 1995). Individual music-stimulation increases face-name recognition (Carruth 1997) and number of words recalled correctly (Prickett & Moore 1991).

In *Play-along* improvement in recall, mood, and active participation is seen (Lord & Garner 1993). Lord & Garner had 20 participants sit around a big table supplied with instruments to play, while they were listening to big band music. *Therapeutic singing* increases alert responses (Clair 1996) and playing of personal significant songs stimulates images and recollections (Tomaino 2000).

*Background music* improves autobiographical recall with no difference between familiar and novel music (Foster 1998) and *music listening* improves spatial-temporal skills (Johnson

*et al.* 1998), reality orientation (Lipe 1991), and active response (Norberg *et al.* 1986). Persons with dementia show ability to learn new song material even though they are not able to learn new verbal material (Prickett & Moore 1991). In a study from 1999 Silber finds no influence of *background music* on MMSE compared to conditions without music (Silber 1999b).

Including the studies of Beatty *et al.* (1988, 1997), Crystal *et al.* (1989), Johnson & Ulatowska (1996), Polk & Kertesz (1993), and Swartz *et al.* (1989, 1992) about a third of the studies listed at page 28 examine the stimulative effect of music on cognition and attention. Most of the studies are from US, but with studies from UK, Sweden and Israel represented.

### **Stimulative approach. Music to increase social interaction (interpersonal level)**

When staff participate in *music-stimulation* (including dance and movement) social interaction between participant and caregiver changes to a deeper level, where “the personnel experienced bonding with the patients, who seemed easier to care for” (G’otell *et al.* 2000). When preschool children participate in *music & movement* activities, increased social interaction is seen with persons suffering from severe dementia; an increased social interaction that is not seen when the children are not there (Newman & Ward 1993).

*Sing-along* groups have a significant effect on the amount of social behaviour (Olderog-Millard & Smith 1989), and *after* sessions with *music-stimulation* or *music listening* increased social interaction between peers are seen (Pollack & Namazi 1992; Sambandham & Shirm 1995).

*Individual therapeutical improvisation*, where the music is improvised not *for* but *with* the client, increases active involvement and confirms that persons with the darkening isolation of dementia “are, indeed, alive, and that relatedness with other people is still possible” (Simpson 2000, p. 177). After 20 individual sessions with Jack who suffers from AD, Ansdell states that the music therapy shows “the restoration of some quality in Jack’s life: his sustained attention and positive engagement in his playing, his ability to share an activity with another person, and a decrease of the frustration, confusion and delusions that dogged his everyday life” (Ansdell 1995, p. 132). Less than 10% of the studies register the stimulative effect of music on social interaction, three in four of these studies are from Europe.

### **Communicative approach. Music to increase personal interaction (intrapersonal level)**

Music therapy, with a purpose to increase personal interaction in the direction of intrapersonal matters, approaches psychotherapy. None of the studies mentioned here directly label their work as psychotherapeutical, but present or directly work with aspects of communication, personhood, contact, confidence, interrelation, emotional needs, psychosocial needs, and therapeutic change.

Implementing *individual therapeutical improvisation* is an approach where intrapsychic matter might be part of the interpersonal exchange. Eeg (2001) and Munk-Madsen (2001a) work with long term therapy with more than 30 sessions where they integrate improvisation in an individual approach. The long therapeutical courses help to break isolation, decrease anxiety, elicit autobiographical memory and means of expressing own identity. Gudrun Aldridge (2000) states that active ‘music-making’ (Nordoff & Robbins 1977) promotes interaction, thereby promoting initiatives in communication (Aldridge, G. 2000, p. 161), and states that the music therapy might influence underlying depressions.

Even though creative music therapy (Nordoff & Robbins 1977) deals with “the creation of something which is at once both communicative and expressive” (Simpson 2000, p 177), and integrates an understanding of psychosocial needs defined by Tom Kitwood (1997), Ansdell would not call his work psychotherapeutical because ...

“Psychotherapy’s use of words to explore the past, to ask ‘why?’ questions of motive and significance is quite different from Creative Music Therapy’s use of music to create a musical experience of the present. Its questions are rather ‘what?’ questions – What is happening now?” (Ansdell 1995, p. 31)

The ‘why?’ questions in a psychotherapeutically orientated approach deal with the understanding of intrapsychic matter. The ‘why?’ questions are not asked directly to the participant suffering from dementia, but are questions that influence the work and the thinking of the therapist. Working or exploring the past and the cultural background is here understood as working with integrating *the whole person*, even though the person suffering from dementia is often *dis-integrated* from past, present and future. Working with personal songs or *therapeutical singing* is seen as a way of integrating the past and aspects of identity: “a single song can encapsulate an entire period of one’s life, and hearing it can restore the essence of that reality” (Tomaino 1998, p. 21). Therapeutical singing using personal songs with persons with dementia is described and accentuated in the background literature dealing with this client group (Aldridge 2000; Bright 1997; Bunne 1986; Friis 1987; Tomaino 1998) and is integrated as part of the therapeutical approach in a large number of studies and articles:

Bolger 1984; Braben 1992; Brotons & Pickett-Cooper 1994; Brotons & Pickett-Cooper 1996; Brown *et al.* 2001; Carruth 1997; Christie 1992, 1995; Clair & Bernstein 1990a, 1990b; Clair 1991, 1996; Eeg 2001; Fitzgerald-Cloutier 1993; Gaertner 1999; Gardiner 2000; Groene 1993, 1998; Göttel *et al.* 2000; Hanser & Clair 1996; Hansson *et al.* 1996; Hatfield & McClune 2002; Johnson & Ulatowska 1996; Korb 1997; Lauvland *et al.* 1992; Lipe 1995; McCloskey 1990; Munk-Madsen 2001a; Newman & Ward 1993; Olderog-Millard & Smith 1989; Pollack & Namazi 1992; Prickett & Moore 1991; Ridder 2001; Riegler 1980; Rolvsjord 1998; Silber & Hes 1995; Simpson 2000; Smith-Marchese 1994; Tomaino 2000; Wellendorf 1991.

*Individual therapeutical singing* increases interactions with another human being at an intimate, personal level allowing the participant to express him/herself. For example in a very positive manner as here with the participant Claire: “Many times while Claire and the therapist were singing, Claire would lean her head very close to the therapist, move her head to the beat and smile, then lean her head back and laugh” (Fitzgerald-Cloutier 1993, p. 35). The choice of personal songs might stimulate recognition, and “the more emotionally charged the song is, the more likely a person will respond” (Tomaino 1998, p. 26). In this understanding the songs might serve as means of expressing and containing intense feelings and make it possible to share these feelings with another person (Hatfield & McClune 2002; Ridder 2002b).

The Norwegian music therapist Randi Rolvsjord describes musical interaction with focus on reminiscence as an important way to cope with “stress of ageing, death or phisic and psychic failures” (Rolvsjord 1998, p. 4). She states that dementia leads to an increased need for reminiscing, but at the same time reduces the ability to reminisce. By referring to the Swedish culture researcher Johan Fornäs as she defines 3 levels of identity: subjective, social and cultural identity, and connects these different aspects of identity with the memory-work.



“The musical interaction engages the old person to act, feel, reminisce, sense, and communicate, and may in this way remind him/her of the most basic aspects of the old person’s identity.” (Rolvsjord 1998, p. 7. *my translation*)

Gaertner (1999) implies both improvisation and music listening but also contacts her clients, here Monsieur F, by *improvised singing*; “I took his hands and sat quietly beside him. After a little while I imitated his cries, then, by slightly modifying the pitch and the volume, we eventually changed to sighing and singing in the style of Maurice Ohana. With our vocal expression we moaned, we complained, we sighed, we questioned life’s injustices, then changed into expressions of hope and partial acceptance. When Monsieur F was spent and peaceful, we returned to *Unité de Vie I* (the unit where Monsieur F lives)” (Gaertner 1999, p. 255).

For persons with dementia some memories and episodes from the past fade away, whereas other memories push themselves forward and overshadow reality. Working with reminiscences from the past and feelings in the present by means of songs is described in the literature as a valuable approach. Only a smaller number of studies, mostly European, explore the communicative function of music focussing on intrapersonal aspects, but it seems to be broadly agreed that the use of familiar and personal songs is meaningful to persons with dementia.

### Various approaches

It is possible to divide the literature included here in four head categories pointing at different approaches: evaluative, regulative, stimulative, and communicative. Most of the studies examine regulative and stimulative effects of music therapy using RCT designs or ‘within subjects designs’, stressing statistical proofs, measuring agitation, ambulation, engagement, social interactions, number of recalled items, etc. A big part of these studies are rooted in behavioural music therapy.

Only a smaller number of studies examine the communicative function of music by describing the interpersonal interaction with focus on intrapsychic aspects. All these studies use case design strategies, are European studies, are of a recent date, and are rooted in humanistic and/or psychotherapeutical orientated approaches.

In the music therapy literature covering *other* client groups, additional approaches might be taken into account. With clients suffering from *dementia* the music therapy work seem to be concentrated mainly on two approaches; regulative or stimulative. Traditionally the classic music therapy models focus on *one* approach, not mixing the approaches, which especially comes to the front when research is formulated and carried out. In eclectic models approaches are mixed according to what works, and the music is thought to have more functions. When this eclectic approach is theoretically founded and the various “ingredients” sorted out and described, it might be called an integrative model. As described later the focus of the music therapeutical work in this research is on the communicative function of the music, but integrated with e.g. a regulative approach. Here the regulation serves as a means to lead the participant to a state where it is possible to enter communication. Instead of dividing the approaches in different directions I see a reason in using results from other directions. Without being aware of regulative and stimulative functions of music, it is difficult to enable situations where interaction at a deeper or more intensive level is possible together with a person suffering from dementia.

The evaluative function is very important to evidence based practice and research, as well as for the clinical work. In the literature most of the evaluative tools deal with the regulative and stimulative function of music. Standardized measures and scales are used to assess behaviour or participation, and few tools deal with the communicative function.



One reason is that a major part of the research in dementia care is influenced by behavioural theory. Another reason is that evaluative tools assessing music and communication in persons suffering a dialogic degenerative disease are not developed. In order to develop such tools that facilitate evaluative procedures of the music therapy process, or establish effects of the music therapy, the phenomenon “communication” in relation to persons with dementia needs to be described at first.

Dividing the literature in categories according to its function is a process where the differences of the studies are stressed. In describing my therapeutical work I use and integrate the different categories, focusing on *stimulative* and *regulative* functions in order to describe the *communicative* functions of the music, and with a long-ranged goal, that this adds more material to develop the *evaluative* function of the music. This creates new categories of mixed approaches that I did not look for in the categorizing process. Instead of focusing the music therapy work on one single approach, I see it as an enrichment to integrate usable techniques and theory from different approaches, although it might conflict with deep-rooted understandings of which approaches belong to which classic music therapy models.

## Summary and conclusion

In the “typical” decline of Alzheimer’s disease some skills or resources seem to be spared longer, e.g. the prosodic aspects of language, abilities related to procedural memory, and skills related to music. AD is the most common dementia disease, and the “typical” deterioration in AD might be very different from other dementia diseases. Generally persons with dementia suffer a dialogical degenerative disease, and adjustment of the communication seems to be essential in order to fulfil psychosocial needs.

The literature on music and dementia points at an increasing interest in music therapy in dementia care. Here different assessment tools using music and musical interaction are described, a few studies examine the sedative adaptation of music, and several studies describe how different approaches might decrease symptoms of agitation. Music in connection with techniques to stimulate the body, such as dance or movements, or stimulation and motivation to active participation, is described in a considerable part of the literature.

A great number of studies show positive effects on cognition and on social interaction in persons with dementia. Personal interaction with focus on emotional or intrapsychic material is referred to in a smaller number of studies. The use of familiar songs as a way to express feelings and identity and to enable reminiscing processes, is integrated at different levels in a considerable number of studies. This shows that the literature covering music and dementia reflects evaluative, regulative, stimulative, and communicative approaches, and especially focus on stimulative and regulative approaches.

In each of the studies and case descriptions lined up at page 28 music is described as representing a resource to the individual person. The music is used in very different ways and settings with the more than 800 persons with dementia that have participated in music activities or music therapy, with a range of different diagnoses, but mostly AD, and on different stages of the disease. From the literature it is clear that the use of music in dementia care is valuable, is administered mostly in order to regulate behaviour (e.g. agitation) or to stimulate active participation, and may generally be concluded to increase quality of life. A growing interest in the communicative function of music might show the corner of new fields of research.

The main purpose of this research is to examine the communicative possibilities in music therapy, using therapeutical singing in the clinical setting, establishing connections of communication with regulative and stimulative approaches.

## Chapter 2

# Singing as therapy

“How does he do anything, I wondered to myself? What happens when he’s dressing, goes to the lavatory, has a bath? I followed his wife into the kitchen and asked her how, for instance, he managed to dress himself. “it’s just like the eating,” she explained. “I put his usual clothes out, in all the usual places, and he dresses without difficulty, singing to himself. He does everything singing to himself. But if he is interrupted and loses the thread, he comes to a complete stop, doesn’t know his clothes – or his own body. He sings all the time – eating songs, dressing songs, bathing songs, everything. He can’t do anything unless he makes it a song.” (Sacks 1985, p. 15)

### The use of songs in music therapy

Traditionally the different models of music therapy that have influenced European music therapy are associated with either improvisation (Alvin 1975; Nordoff & Robbins 1977; Priestley 1975) or with music listening in receptive music therapy (Bonny 1975). Songs might have been part of the active music therapy described in the literature, but with the function to signalise start and ending of the therapy, and not described as the main technique in the sessions. It was very inspiring to me to find 3 other researchers in my peer group at the PhD programme in Aalborg who based their research and therapeutical work on songs; Cochavit Elephant singing for girls with Rett syndrome, demonstrating their capacity for intentional and meaningful communication (Elephant 2002); Trygve Aasgaard promoting health in children with cancer in the process of creating and performing songs (Aasgaard 2002); and Felicity Baker examining if singing improves the affective intonation of people with monotone voices, caused by brain injury (research in progress).

In Bruscia’s “Case studies in music therapy” (1991) the following authors describe their work with well-known songs in music therapy, either as part of the structure in the session or as a technique to express essential feelings: Wigram, Aigen, Hibben, Henderson, Robbins & Robbins, Dvorkin, Clarkson, Duey, McMaster, Erdonmez-Grocke, Clair, Whittall, Beggs, and Martin. The authors Loveszy, Fischer, Perilli, Boone, and Smith work with song writing.

I find it convincing that almost half of the authors of the case studies in the book mentioned, where “highly qualified music therapists” contribute, include songs in their work or directly take songs as their starting point in the therapy. Other therapists who base their work on singing are Austin (1998) working with improvised singing, and Newham (1999) working with voice movement therapy.

## 2.1 Singing and dementia

In February 2002 I was invited to hold a seminar on music therapy for staff working with elderly people in Århus county. I used the opportunity to distribute a small questionnaire, and while I was describing the different implementations of music activities (listed in table 1.1, page 30) the present staff members would mark on a five point Lickert scale (ranging from *never* to *several times a week*) indicating if the activity took place at their unit and how often. 69 units were represented (some with several staff members) dispersed on 39 institutions out of 45 in the county. The questionnaire showed that sing-along was the most popular activity, and was implied in all institutions and on all units except for one. In a majority of units sing-along would be implemented several times a week.

There are two possible explanations to this result:

- staff members in Århus like to sing, or
- if staff from Århus county are assumed to be representative of Danish staff, there is a general tendency to use sing-along implementations in elderly care in Denmark.

The elderly generation in Denmark has grown up in a very strong song tradition where people would sing when they met for celebrations, political meetings, and cultural events. This might be a significant reason still to use songs when people come together. The literature review in chapter 1 name a long list of studies or articles where singing is integrated in music activities with persons with dementia (page 34). This supports the idea that songs are broadly used in other countries too, and Olderog-Millard & Smith (1989) write that singing “is described in the literature as one of the most popular activities for the AD patient”.

Several studies support the idea of singing as an effective strategy with persons suffering from dementia. Singing is measured to have an effect on behaviour by decreasing agitation (Braben 1992; Brotons & Pickett-Cooper 1996; Brown *et al.* 2001; Fitzgerald-Cloutier 1993; Olderog-Millard & Smith 1989), and is described to have a soothing effect (Braben 1992), a positive influence on social behaviour (Olderog-Millard & Smith 1989), mood, and on attention (Clair 2000; Götell *et al.* 2000).

When dementia progresses the ability to sing decreases (Brotons & Pickett-Cooper 1994; Clair & Bernstein 1990b; Lipe 1995), and studies show that movement or rhythm activities elicit more response than singing (Groene *et al.* 1998; Hanson *et al.* 1996; Brotons & Pickett-Cooper 1994). Singing has a positive influence on verbal communication (Brotons & Koger 2000; Olderog-Millard & Smith 1989; Prickett & Moore 1991) and stimulates memory retrieval (Carruth 1997; Foster 1998; Tomaino 2000).

Even persons suffering from severe dementia may respond to songs (Clair 1996, Fitzgerald-Cloutier 1993; Olderog-Millard 1989; Reisberg 1999) or participate actively by humming or singing (Beatty 1994; Hanson *et al.* 1996; Reisberg 1983, 1999). In their study Prickett & Moore (1991) observe that persons with dementia are able to learn new songs, and to participate though they are severely cognitively impaired:

“The therapists noted that patients who could not recall their birthday, their home town, or the therapists’ names could sing virtually every word to “Amazing Grace” and “Happy birthday” and could recall key words in “It’s a small world” (*a song previously unknown to the participants*).” (Prickett 1991 & Moore, p. 107)

Establishing that singing is broadly used in dementia care, and presumably with interesting results, my next step is to sum up reasons for spending (or wasting?) time on this

more or less rhythmic and melodic vocal expressions that we call singing. First of all a bodily influence on singing is described.

## 2.2 General physiological influence of singing

When a person actively sings the pressure of breath released from the lungs causes the vocal cords to vibrate and make sound. Singing loud, the pressure of the breath travelling up from the lungs through the voice tube is increased by contracting the muscles of the chest and abdomen, and squeezing the lungs empty with forceful pressure (Newham 1999).

In elderly persons the lungs become stiffer, the respiratory muscles become weaker, and the chest wall becomes more rigid. The lungs are never totally emptied of air when we exhale and the amount of residual air that remains in the lungs increases with age. For persons aged 60 more than a third of the lung capacity is filled with residual air ([www.ageworks.com](http://www.ageworks.com)). The more capacity used for residual air, the less is left for vital capacity. Residual air in the lungs is not clean and with an increased percentage of CO<sub>2</sub> (Melin 1997). Older adults are less efficient in controlling breathing and may have a greater risk of dying from acute respiratory problems ([www.ageworks.com](http://www.ageworks.com)). When laughing we expire with a speed of 65 miles (100 km) an hour, with the result that a larger part of the residual air is pressed out (Melin 1997). This leaves more vital capacity to the lungs and to a greater oxygen uptake. Just as laughing, singing, especially loud singing, stimulate the lung system and increase oxygen intake. This might be important to elderly persons who do not move very much. The supply of oxygen to the brain might increase cognitive functioning, attention and concentration.

To many people choir singing is a positive recreation, and it generally seems to cause positive emotional arousal, relaxation, positive mood, and is experienced as a pleasurable social event (Beck *et al.* 2000). In a study with members of a professional choir Beck *et al.* measured S-IgA concentrations in saliva, and found that levels increased significantly during rehearsals. S-IgA is an antibody that functions as defence against infections, and an increase of these S-IgA levels shows that choir singing strengthens the immune defence. It was additionally found that cortisol concentrations decreased significantly during rehearsals. High cortisol levels are connected with stress. Beck explains that these results are due to the social support that evidently is very much a part of the choir singing experience, and he compares effects of singing with effects of humour.

Panksepp (1995) examines chills induced by music and he suggest that “the a cappella soprano voice, as well as string instruments such as violins and cellos, when rendered with an insistent piercing quality that is often best achieved with little accompaniment, is ideal for generating chills” (*ibid.*, p. 196). He theorizes that this response to music, explained as a central nervous system phenomenon, originates from our mammalian brain mechanisms for social bonding and that we are attuned to certain emotional sounds.

Singing seems to promote health and well-being, which is just as important - or maybe even more - for persons with dementia as for everybody else. If we are generally attuned to certain vocal soprano sounds, this might be important with dementia sufferers that are difficult to contact, and the singing might be used as a natural way of triggering contact.

## 2.3 Demands

It is demanding being together with other persons. In some way participants in a group are expected to interact, or at least to act. In a working-partnership people are *doing* things together and in this way contributing to the partnership. Being active in a partnership means

having an identity. It is difficult for persons who lose cognitive and functional abilities to have an active position in a partnership. This might lead to loss of identity. It is therefore crucial to implement activities where people in some way are *doing things* with others in a way where too high demands are not excluding the person.

„Singing is an effective activity because it can be adapted to the patient’s level of functioning. For example, in a group situation patients can participate by singing, listening, tapping or nodding to the beat, or by playing rhythm instruments. Therefore, one can involve patients who no longer have the ability to verbalize coherently along with patients who still can.” (Olderog-Millard & Smith 1989, p. 60)

In a dissertation about lucidity in people with severe dementia Normann (2001) concludes that even small demands, that the patient is unable to handle, may reduce her or him to non-lucidity. If it is possible to create situations where persons might contribute to the partnership or group according to their abilities, it might have positive influence on the feeling of identity and on periods of lucidity.

In order to decrease demands Whithcomb (1994) suggests singing without text, as the use of words is too challenging to some persons with dementia-. By leaving out the text I see that the narrative function of the song is left out. On some occasions the narrative aspect might have emotional importance, even when the listener is not able to join in. On other occasions the focus in the interaction might be on the rhythm or the movements in the song, and leaving out the text does not influence. Consequently leaving out the text in order to minimise demands might remove important qualities to a song. It is necessary to observe and assess in every situation when singing is too demanding and when it is necessary to leave out challenging aspects, as well as considering listening as a way of contributing actively to the group.

## 2.4 Contextual cues

When we listen to a song, or participate by singing, the text or certain words might function as cues. The tune, as well, or certain harmonic or rhythmic features might serve as cues. Cues are either identification marks, or signals that guide behaviour (Reber 1995, p. 176). They are information in an environment (Roberts & Algase 1988, p. 84); and the ways in which we act are dependent on our understanding the cues, given in the environment. Persons with dementia generally show deficits in encoding contextual information (Aldridge 1996, p. 30). Already at early stages of AD impaired processing of contextual cues influence the ability to remember and to understand information about events (ibid.). “Individuals with Alzheimer’s disease continue to encode experiences using a combination of senses” (ibid., p. 31), and this makes it important to focus on elements rich in cues, e.g. songs, in dementia care. Certain songs seems very important to a “cyclic aspect of time” (Rolvjord 1998, p. 11) as they mark the seasons, the course of the day and even might mark the course of therapy sessions by cuing the beginning and end with certain songs. Apart from singing specific songs related to time and place, songs might be connected to periods of time in the past. Singing or listening to the song might evoke feelings and memories specifically related to a period, where the song had a certain meaning to the person. This has to do with reminiscence and identity. (Cues and songs in the clinical setting are further described at page 101).